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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

Applicant: Mitsuo YAMADA et al.
Title: RESINOUS TUBE AND FUEL
SYSTEM PIPING TUBE
Appl. No.: 10/617,731
Filing Date: 7/14/2003
Examiner: Michael C. Miggins
Art Unit: 1772
Confirmation Number: 3612

BRIEF ON APPEAL

Mail Stop Appeal Brief - Patents
P.O. Box 1450
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Sir:

Under the provisions of 37 C.F.R. § 41.37, this Appeal Brief is being filed together with a credit card payment form in the amount of \$510.00 covering the 37 C.F.R. 41.20(b)(2) appeal fee. If this fee is deemed to be insufficient, authorization is hereby given to charge any deficiency (or credit any balance) to the undersigned deposit account 19-0741.

REAL PARTY IN INTEREST

The real party in interest is NISSAN MOTOR CO., LTD., of Japan.

RELATED APPEALS AND INTERFERENCES

At this time, Appellants are unaware of any appeals or interferences that will directly affect or be directly affected by or have a bearing on the Board's decision in the present appeal.

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STATUS OF CLAIMS

1. Claims pending: 1-4 and 7-19.
2. Claims withdrawn: NONE.
3. Claims cancelled: 5-6.
4. Claims rejected: 1-4 and 7-19.
5. Claims on appeal: 1-4 and 7-19.

A copy of claims 1-4 and 7-19 on appeal is provided in the CLAIMS APPENDIX. All of these claims have been finally rejected.

STATUS OF AMENDMENTS

Appellants have filed no claim amendments subsequent to the issuance of the Office Action dated May 11, 2007.

SUMMARY OF CLAIMED SUBJECT MATTER

With regard to **claim 1**, Appellants have disclosed and claimed a resinous tube comprising at least one first cylindrical resin layer (A) comprising at least one resin selected from the group consisting of polybutylene terephthalate (PBT), polybutylene naphthalate (PBN), polyethylene terephthalate (PET) and polyethylene naphthalate (PEN); and at least one second cylindrical resin layer (B) formed generally coaxially with the at least one first cylindrical layer and comprising at least one copolymer which comprises polybutylene terephthalate (PBT) or polybutylene naphthalate (PBN), wherein the at least one second cylindrical resin layer (B) is in direct contact with and serves as a supporting layer for the at least one first cylindrical resin layer (A), wherein the at least one second cylindrical resin layer (B) comprises a block copolymer which comprises at least one segment selected from the group consisting of polybutylene terephthalate (PBT) and polybutylene naphthalate (PBN) as a hard segment, and at least one segment selected from the group consisting of

polytetramethylene glycol and polycaprolactone as a soft segment, wherein a cylindrical resin layer forming an innermost layer of the resinous tube is electrically conductive. (Page 5, lines 15-30; page 7, lines 13-20; page 10, line 28 – page 11, line 11).

With regard to **claim 2**, Appellants have disclosed and claimed a resinous tube wherein the conductive cylindrical resin layer forming the innermost layer has a volume resistivity value of not higher than $10^6 \Omega \cdot \text{cm}$. (Page 8, lines 4-9).

With regard to **claim 3**, Appellants have disclosed and claimed a resinous tube, wherein the conductive cylindrical resin layer forming the innermost layer has a thickness within a range of from 3 to 30 % of a total thickness of all the layers of the resinous tube. (Page 14, line 25 – page 15, line 12).

With regard to **claim 4**, Appellants have disclosed and claimed a resinous tube, wherein the at least one first resin layer (A) has a total thickness within a range of from 3 to 70 % of a total thickness of all the layers of the resinous tube. (Page 15, line 13 – page 16, line 1).

With regard to **claim 7**, Appellants have disclosed and claimed a resinous tube, wherein the at least one second cylindrical resin layer (B) comprises at least one of (i) a random PBT copolymer, or (ii) a random PBN copolymer, wherein the random PBT copolymer or the random PBN copolymer comprises (a) a copolymer polyester which comprises an acid component and (b) a glycol component, wherein the acid component comprises at least one of a terephthalic acid, an ester-formable derivative of terephthalic acid, a naphthalenedicarboxylic acid, or an ester-formable derivative of naphthalenedicarboxylic acid, and at least one of a hydrogenated dimer acid or an ester-formable derivative of hydrogenated dimer acid, and wherein the glycol component comprises 1, 4-butanediol. (Page 11, line 22 – page 13, line 4).

With regard to **claim 8**, Appellants have disclosed and claimed a resinous tube, wherein the PBT copolymer is a copolymer polyester prepared by copolymerization of polytetramethylene glycol and a copolymer polyester which includes an acid component and glycol component, wherein the acid component comprises at least one of a terephthalic acid, an ester-formable derivative of terephthalic acid, a naphthalenedicarboxylic acid, or an ester-formable derivative of naphthalenedicarboxylic acid, and at least one of a hydrogenated dimer

acid or an ester-formable derivative of hydrogenated dimer acid, and wherein the glycol component comprises 1, 4-butanediol. (Page 11, line 22 – page 13, line 4).

With regard to **claim 9**, Appellants have disclosed and claimed a resinous tube, wherein the conductive cylindrical resin layer forming the innermost layer comprises a resin which comprises a copolymer polyester which comprises an acid component and a glycol component, wherein the acid component comprises at least one of a terephthalic acid, an ester-formable derivative of terephthalic acid, a naphthalenedicarboxylic acid, or an ester-formable derivative of naphthalenedicarboxylic acid, and at least one of a hydrogenated dimer acid or an ester-formable derivative of hydrogenated dimer acid, and wherein the glycol component includes 1, 4-butanediol. (Page 11, line 22 – page 13, line 4).

With regard to **claim 10**, Appellants have disclosed and claimed a resinous tube, wherein the conductive resin layer forming the innermost layer comprises a resin comprising polybutylene terephthalate (PBT) in which ethylene-propylene rubber (EPR) is dispersed, the resin having a volume resistivity value of not higher than $10^6 \Omega \cdot \text{cm}$. (Page 8, lines 4-9 & page 13, line 27 – page 14, line 9).

With regard to **claim 11**, Appellants have disclosed and claimed a resinous tube, wherein the ethylene propylene rubber has a particle size of not larger than $1 \mu\text{m}$. (Page 13, line 27 – page 14 line 7).

With regard to **claim 12**, Appellants have disclosed and claimed a resinous tube, wherein the conductive cylindrical resin layer forms part of the at least one first cylindrical resin layer and the at least one second cylindrical resin layer. (Page 5, lines 24-30).

With regard to **claim 13**, Appellants have disclosed and claimed a resinous tube, wherein the conductive resin layer is independent from the at least one first cylindrical resin layer and the at least one second cylindrical resin layer. (Page 5, lines 24-30).

With regard to **claim 14**, Appellants have disclosed and claimed a tube for piping in a fuel system of a vehicle, comprising at least one first cylindrical resin layer (A) comprising at least one resin selected from the group consisting of polybutylene terephthalate (PBT), polybutylene naphthalate (PBN), polyethylene terephthalate (PET) and polyethylene naphthalate (PEN); and at least one second cylindrical resin layer (B) formed generally coaxially with the at least one first cylindrical layer and comprising at least one copolymer which comprises polybutylene terephthalate (PBT) or polybutylene naphthalate (PBN),

wherein the at least one second cylindrical resin layer (B) is in direct contact with and serves as a supporting layer for the at least one first cylindrical resin layer (A), wherein the at least one second cylindrical resin layer (B) comprises a block copolymer which comprises at least one segment selected from the group consisting of polybutylene terephthalate (PBT) and polybutylene naphthalate (PBN) as a hard segment, and at least one segment selected from the group consisting of polytetramethylene glycol and polycaprolactone as a soft segment, wherein a cylindrical resin layer forming an innermost layer of the resinous tube is electrically conductive, fuel being in direct contact with an inner surface of the innermost layer. (Page 5, lines 15-30; page 7, lines 13-20; page 10, line 28 – page 11, line 17).

With regard to **claim 15**, Appellants have disclosed and claimed a motor vehicle comprising a resinous tube. (Page 1, lines 5-12).

With regard to **claim 16**, Appellants have disclosed and claimed a fuel system for a motor vehicle comprising a tube. (Page 1, lines 5-12)

With regard to **claim 17**, Appellants have disclosed and claimed a motor vehicle comprising a fuel system which comprises a tube. (Page 1, lines 5-12).

With regard to **claim 18**, Appellants have disclosed and claimed a resinous tube comprising at least one first cylindrical resin layer (A) comprising at least one resin selected from the group consisting of polybutylene terephthalate (PBT), polybutylene naphthalate (PBN), polyethylene terephthalate (PET) and polyethylene naphthalate (PEN); and at least one second cylindrical resin layer (B) formed generally coaxially with the at least one first cylindrical layer and comprising at least one copolymer which comprises polybutylene terephthalate (PBT) or polybutylene naphthalate (PBN), wherein the at least one second cylindrical resin layer (B) comprises a block copolymer which comprises at least one segment selected from the group consisting of polybutylene terephthalate (PBT) and polybutylene naphthalate (PBN) as a hard segment, and at least one segment selected from the group consisting of polytetramethylene glycol and polycaprolactone as a soft segment, wherein a cylindrical resin layer forming an innermost layer of the resinous tube is electrically conductive. (Page 5, lines 15-30; page 7, lines 13-20; page 10, line 28 – page 11, line 17).

GROUND OF REJECTION TO BE REVIEWED ON APPEAL

The following grounds of rejection that are set forth in the Final Office Action are to be reviewed on appeal^{1,2}:

(1) the rejection of pending claims 1-4 and 12-18 under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Patent 6,591,871 to Smith *et al.* (hereafter “Smith”) in view of U.S. Patent 6,576,312 to Ito *et al.* (hereafter “Ito ‘312”);

(2) the rejection of pending claims 7-9 under 35 U.S.C. §103(a) as allegedly being unpatentable over Smith in view of Ito ‘312 and further in view of U.S. Patent 6,619,330 to Ito *et al.* (hereafter “Ito ‘330”); and

(3) the rejection of pending claims 10-11 under 35 U.S.C. §103(a) as allegedly being unpatentable over Smith in view of Ito ‘312 and further in view of U.S. Patent 6,589,647 to Ozawa *et al.* (hereafter “Ozawa”).

ARGUMENT

I. Rejection Of Claims 1-4 And 12-18 Under 35 U.S.C. §103 – Smith and Ito ‘312

On page 2, of the Final Office Action dated January 24, 2006, the PTO has rejected claims 1-4 and 8-12 under 35 U.S.C. §103(a) as allegedly being unpatentable over Smith and Ito ‘312. Appellants respectfully request reversal of this rejection for the reasons set forth below.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the

¹ Appellants acknowledge that the PTO has *provisionally* rejected claims 1-4 and 7-18 (in the Office Action dated January 24, 2006) and claim 19 (in the Office Action dated May 11, 2007) on the grounds of obviousness-type double patenting as allegedly being unpatentable over claims 1-18 of copending application 10/980,313 in view of U.S. Patent 6,591,871 to Smith *et al.* At present, no allowable subject matter has been identified as such by the Examiner responsible for copending application 10/980,313. Should these rejections become *non-provisional*, Appellants will evaluate the propriety of the rejections and, if appropriate, submit a terminal disclaimer at that time.

² Appellants also acknowledge that the Examiner, on page 3 of the Office Action dated May 11, 2007, has rejected claim 19 under 35 U.S.C. §103(a) as allegedly being unpatentable over Smith in view of Ito ‘312. Appellants are not seeking review of this rejection inasmuch as claim 19 includes a typographical error making it dependent upon claim 1 (which requires “direct contact”) instead of claim 18 (which does not require “direct contact”). Depending on the disposition of the issues raised in this appeal, Appellants will cancel or correct the dependency of claim 19.

knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, prior art references must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in Appellants' disclosure. *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991).

A. Claims 1-4 and 12-13

Smith fails to disclose “at least one first cylindrical resin layer (A)” and “at least one second cylindrical resin layer (B)” and “wherein the at least one second cylindrical resin layer (B) is in direct contact with and serves as a supporting layer for the at least one first cylindrical resin layer (A)” as recited in independent claim 1. The only discussion in Smith regarding the hose 10 and the cover 14 appears at col. 3, lines 44-50 where Smith states that the cover is “adjacent” the outside surface of the outside wall of the hose and at col. 4, lines 15-26 where Smith states that it may be desirable to incorporate a “tie layer” (adhesive) between the hose 10 and the cover 14. The remainder of Smith's disclosure fails to provide any information regarding the method by which the concentric tubes are made or are assembled together.

In contrast to Smith and with regard to the presently claimed invention, Appellants wish to direct the Board's attention to the paragraph bridging pages 9 and 10 of the Specification in which Appellants state that:

The above-mentioned supporting layer (cylindrical resin layer B) contains as the main component or is formed of polybutylene terephthalate (PBT) copolymer and/or polybutylene naphthalate (PBN) copolymer, so that a high miscibility is exhibited at a laminated or contacting section between the supporting layer and the above-mentioned permeation-interrupting layer. Additionally, even only extrusion of both layers provides a sufficient adhesiveness so that an excellent delamination or peel resistance can be obtained in a high temperature atmosphere. Further, since no adhesive layer is required between the supporting layer and the permeation-interrupting layer, the resinous tube can be obtained at a very low cost. Furthermore, in the supporting layer, PBT and/or PBN may be mixed in addition to PBT copolymer and/or

PBN copolymer, which is effective for further improving the above-mentioned delamination.

In light of this passage in Appellants' Specification and the language in the claim 1 which states that "the at least one second cylindrical resin layer (B) is in direct contact with and serves as a supporting layer for the at least one first cylindrical resin layer (A)", Appellants submit that Smith's positioning of a cover layer 14 adjacent to hose 10 and Smith's use of an adhesive does not constitute the presently claimed "direct contact" between the "at least one second cylindrical resin layer (B)" and the "at least one first cylindrical resin layer (A)." The additional reference, namely Ito '312 fails to resolve this fundamental deficiency in Smith. For at least this reason, Appellants submit that the rejections of claims 1-4 based upon the combination Smith and Ito '312 is improper and ought to be withdrawn.

If an independent claim is nonobvious under §103, then any claim depending therefrom is nonobvious. *In re Fine*, 5 USPQ2d 1596 (Fed. Cir. 1988). See MPEP 2143.03. Thus, Appellants submit that claims 2-4 and 12-13, each of which ultimately depends from independent claim 1, are also non-obvious.

In addition, and with further regard to claims 1-4 and 12-13, Appellants note that Smith fails to disclose a resinous tube "wherein the at least one second cylindrical resin layer (B) comprises a block copolymer which comprises at least one segment selected from the group consisting of polybutylene terephthalate (PBT) and polybutylene naphthalate (PBN) as a hard segment, and at least one segment selected from the group consisting of polytetramethylene glycol and polycaprolactone as a soft segment." Appellants acknowledge that the PTO has combined Smith with Ito '312. Appellants note, however, that there is no motivation or suggestion in either Smith or Ito '312 that would lead a person having ordinary skill in the art to modify Smith by replacing Smith's cover layer 14 with the *innermost* or *intermediate* layer 2a, 2b of Ito '312. Accordingly, it appears that this combination was based upon impermissible hindsight, and, on this basis, Appellants submit that the outstanding rejection based upon the combination of Smith and Ito '312 should be withdrawn.

Finally, Appellants note that the present specification contains comparative data in the form of numerous examples and comparative examples which demonstrate unexpected results. In contrast, Smith does not even contain a single working example.

In view of the foregoing, Appellants respectfully request reversal of the outstanding rejection of claims 1-4 and 12-13 under §103.

B. Claims 14-17

Smith fails to disclose “at least one first cylindrical resin layer (A)” and “at least one second cylindrical resin layer (B)” and “wherein the at least one second cylindrical resin layer (B) is in direct contact with and serves as a supporting layer for the at least one first cylindrical resin layer (A)” as recited in independent claim 14. The only discussion in Smith regarding the hose 10 and the cover 14 appears at col. 3, lines 44-50 where Smith states that the cover is “adjacent” the outside surface of the outside wall of the hose and at col. 4, lines 15-26 where Smith states that it may be desirable to incorporate a “tie layer” (adhesive) between the hose 10 and the cover 14. The remainder of Smith’s disclosure fails to provide any information regarding the method by which the concentric tubes are made or are assembled together.

In contrast to Smith and with regard to the presently claimed invention, Appellants wish to direct the Board’s attention to the paragraph bridging pages 9 and 10 of the Specification in which Appellants state that:

The above-mentioned supporting layer (cylindrical resin layer B) contains as the main component or is formed of polybutylene terephthalate (PBT) copolymer and/or polybutylene naphthalate (PBN) copolymer, so that a high miscibility is exhibited at a laminated or contacting section between the supporting layer and the above-mentioned permeation-interrupting layer. Additionally, even only extrusion of both layers provides a sufficient adhesiveness so that an excellent delamination or peel resistance can be obtained in a high temperature atmosphere. Further, since no adhesive layer is required between the supporting layer and the permeation-interrupting layer, the resinous tube can be obtained at a very low cost. Furthermore, in the supporting layer, PBT and/or PBN may be mixed in addition to PBT copolymer and/or PBN copolymer, which is effective for further improving the above-mentioned delamination.

In light of this passage in Appellants’ Specification and the language in the claims which states that “the at least one second cylindrical resin layer (B) is in direct contact with and serves as a supporting layer for the at least one first cylindrical resin layer (A)”, Appellants

submit that Smith's positioning of a cover layer 14 adjacent to hose 10 and Smith's use of an adhesive does not constitute the presently claimed "direct contact" between the "at least one second cylindrical resin layer (B)" and the "at least one first cylindrical resin layer (A)." The additional reference, namely Ito '312, fails to resolve this fundamental deficiency in Smith. For at least this reason, Appellants submit that the rejections of claims 1 and 14 based upon the combination of Smith and Ito '312 is improper and ought to be withdrawn.

If an independent claim is nonobvious under §103, then any claim depending therefrom is nonobvious. *In re Fine*, 5 USPQ2d 1596 (Fed. Cir. 1988). See MPEP 2143.03. Thus, Appellants submit that claims 2-4 and 7-16 which ultimately depend from either independent claim 1 or independent claim 14, are also non-obvious.

In addition, and with further regard to claims 14-17, Appellants note that Smith fails to disclose a resinous tube "wherein the at least one second cylindrical resin layer (B) comprises a block copolymer which comprises at least one segment selected from the group consisting of polybutylene terephthalate (PBT) and polybutylene naphthalate (PBN) as a hard segment, and at least one segment selected from the group consisting of polytetramethylene glycol and polycaprolactone as a soft segment." Appellants acknowledge that the PTO has combined Smith with Ito '312. Appellants note, however, that there is no motivation or suggestion in either Smith or Ito '312 that would lead a person having ordinary skill in the art to modify Smith by replacing Smith's cover layer 14 with the *innermost* or *intermediate* layer 2a, 2b of Ito '312. Accordingly, it appears that this combination was based upon impermissible hindsight, and, on this basis, Appellants submit that the outstanding rejection based upon the combination of Smith and Ito '312 should be withdrawn.

Finally, Appellants note that the present specification contains comparative data in the form of numerous examples and comparative examples which demonstrate unexpected results. In contrast, Smith does not even contain a single working example.

In view of the foregoing, Appellants respectfully request reversal of the outstanding rejection of claims 12-17 under §103.

C. Claim 18

Smith fails to disclose a resinous tube "wherein the at least one second cylindrical resin layer (B) comprises a block copolymer which comprises at least one segment selected from the group consisting of polybutylene terephthalate (PBT) and polybutylene naphthalate

(PBN) as a hard segment, and at least one segment selected from the group consisting of polytetramethylene glycol and polycaprolactone as a soft segment.” Appellants acknowledge that the PTO has combined Smith with Ito ‘312. Appellants note, however, that there is no motivation or suggestion in either Smith or Ito ‘312 that would lead a person having ordinary skill in the art to modify Smith by replacing Smith’s cover layer 14 with the *innermost* or *intermediate* layer 2a, 2b of Ito ‘312. Accordingly, it appears that this combination was based upon impermissible hindsight, and, on this basis, Appellants submit that the outstanding rejection based upon the combination of Smith and Ito ‘312 should be withdrawn.

Finally, Appellants note that the present specification contains comparative data in the form of numerous examples and comparative examples which demonstrate unexpected results. In contrast, Smith does not even contain a single working example.

In view of the foregoing, Appellants respectfully request reversal of the outstanding rejection of claim 18 under §103.

II. Rejection of Claims 7-9 Under 35 U.S.C. §103 – Smith, Ito ‘312, and Ito ‘330

On page 5 of the Final Office Action dated January 24, 2006, the PTO has rejected claims 7-9 under 35 U.S.C. §103(a) as allegedly being unpatentable over Smith in view of Ito ‘312 and further in view of Ito ‘330. Appellants respectfully request reversal of this rejection for the reasons set forth below.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, prior art references must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in Appellants’ disclosure. *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991).

A. Claims 7-9

As discussed above, Smith fails to disclose “at least one first cylindrical resin layer (A)” and “at least one second cylindrical resin layer (B)” and “wherein the at least one second cylindrical resin layer (B) is in direct contact with and serves as a supporting layer for the at

least one first cylindrical resin layer (A)” as recited in independent claim 1. The only discussion in Smith regarding the hose 10 and the cover 14 appears at col. 3, lines 44-50 where Smith states that the cover is “adjacent” the outside surface of the outside wall of the hose and at col. 4, lines 15-26 where Smith states that it may be desirable to incorporate a “tie layer” (adhesive) between the hose 10 and the cover 14. The remainder of Smith’s disclosure fails to provide any information regarding the method by which the concentric tubes are made or are assembled together.

In contrast to Smith and with regard to the presently claimed invention, Appellants wish to direct the Board’s attention to the paragraph bridging pages 9 and 10 of the Specification in which Appellants state that:

The above-mentioned supporting layer (cylindrical resin layer B) contains as the main component or is formed of polybutylene terephthalate (PBT) copolymer and/or polybutylene naphthalate (PBN) copolymer, so that a high miscibility is exhibited at a laminated or contacting section between the supporting layer and the above-mentioned permeation-interrupting layer. Additionally, even only extrusion of both layers provides a sufficient adhesiveness so that an excellent delamination or peel resistance can be obtained in a high temperature atmosphere. Further, since no adhesive layer is required between the supporting layer and the permeation-interrupting layer, the resinous tube can be obtained at a very low cost. Furthermore, in the supporting layer, PBT and/or PBN may be mixed in addition to PBT copolymer and/or PBN copolymer, which is effective for further improving the above-mentioned delamination.

In light of this passage in Appellants’ Specification and the language in the claims which states that “the at least one second cylindrical resin layer (B) is in direct contact with and serves as a supporting layer for the at least one first cylindrical resin layer (A)”, Appellants submit that Smith’s positioning of a cover layer 14 adjacent to hose 10 and Smith’s use of an adhesive does not constitute the presently claimed “direct contact” between the “at least one second cylindrical resin layer (B)” and the “at least one first cylindrical resin layer (A).” The additional references, namely Ito ‘330 and Ito ‘312, fail to resolve this fundamental deficiency in Smith. The PTO has cited Ito ‘330 here for Ito ‘330’s alleged teachings regarding hydrogenated dimer acids in a fuel hose. Ito ‘330 adds nothing to resolve the fundamental

deficiencies in Smith. For at least this reason, Appellants submit that the rejections of claim 1 based upon the various combinations of Smith, Ito '312, and Ito '330 are improper and ought to be withdrawn.

If an independent claim is nonobvious under §103, then any claim depending therefrom is nonobvious. *In re Fine*, 5 USPQ2d 1596 (Fed. Cir. 1988). See MPEP 2143.03. Thus, Appellants submit that claims 2-4 and 7-16 which ultimately depend from either independent claim 1 or independent claim 14, are also non-obvious.

In addition, and with regard to claim 1-4 and 7-18, Appellants note that Smith fails to disclose a resinous tube “wherein the at least one second cylindrical resin layer (B) comprises a block copolymer which comprises at least one segment selected from the group consisting of polybutylene terephthalate (PBT) and polybutylene naphthalate (PBN) as a hard segment, and at least one segment selected from the group consisting of polytetramethylene glycol and polycaprolactone as a soft segment.” Appellants acknowledge that the PTO has combined Smith with Ito '312. Appellants note, however, that there is no motivation or suggestion in either Smith or Ito '312 that would lead a person having ordinary skill in the art to modify Smith by replacing Smith's cover layer 14 with the *innermost* or *intermediate* layer 2a, 2b of Ito '312. Accordingly, it appears that this combination was based upon impermissible hindsight, and, on this basis, Appellants submit that the outstanding rejection based upon the combination of Smith and Ito '312 should be withdrawn.

Finally, Appellants note that the present specification contains comparative data in the form of numerous examples and comparative examples which demonstrate unexpected results. In contrast, Smith does not even contain a single working example.

In view of the foregoing, Appellants respectfully request reversal of the outstanding rejection of claims 7-9 under §103.

III. Rejection of Claims 10-11 Under 35 U.S.C. §103 – Smith, Ito '313, and Ozawa

On page 6 of the Final Office Action dated January 24, 2006, the PTO has rejected claims 10-11 under 35 U.S.C. §103(a) as allegedly being unpatentable over Smith in view of Ito '312 and further in view of Ozawa. Appellants respectfully request reversal of this rejection for the reasons set forth below.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, prior art references must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in Appellants' disclosure. *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991).

A. Claims 10-11

As discussed above, Smith fails to disclose "at least one first cylindrical resin layer (A)" and "at least one second cylindrical resin layer (B)" and "wherein the at least one second cylindrical resin layer (B) is in direct contact with and serves as a supporting layer for the at least one first cylindrical resin layer (A)" as recited in independent claim 1. The only discussion in Smith regarding the hose 10 and the cover 14 appears at col. 3, lines 44-50 where Smith states that the cover is "adjacent" the outside surface of the outside wall of the hose and at col. 4, lines 15-26 where Smith states that it may be desirable to incorporate a "tie layer" (adhesive) between the hose 10 and the cover 14. The remainder of Smith's disclosure fails to provide any information regarding the method by which the concentric tubes are made or are assembled together.

In contrast to Smith and with regard to the presently claimed invention, Appellants wish to direct the Board's attention to the paragraph bridging pages 9 and 10 of the Specification in which Appellants state that:

The above-mentioned supporting layer (cylindrical resin layer B) contains as the main component or is formed of polybutylene terephthalate (PBT) copolymer and/or polybutylene naphthalate (PBN) copolymer, so that a high miscibility is exhibited at a laminated or contacting section between the supporting layer and the above-mentioned permeation-interrupting layer. Additionally, even only extrusion of both layers provides a sufficient adhesiveness so that an excellent delamination or peel resistance can be obtained in a high temperature atmosphere. Further, since no adhesive layer is required between the supporting layer and the permeation-interrupting layer, the resinous tube can be obtained at a very low cost. Furthermore, in the supporting layer, PBT

and/or PBN may be mixed in addition to PBT copolymer and/or PBN copolymer, which is effective for further improving the above-mentioned delamination.

In light of this passage in Appellants' Specification and the language in the claims which states that "the at least one second cylindrical resin layer (B) is in direct contact with and serves as a supporting layer for the at least one first cylindrical resin layer (A)", Appellants submit that Smith's positioning of a cover layer 14 adjacent to hose 10 and Smith's use of an adhesive does not constitute the presently claimed "direct contact" between the "at least one second cylindrical resin layer (B)" and the "at least one first cylindrical resin layer (A)." Here, in addition to Ito '312, the PTO has attempted to combine a third reference Ozawa for Ozawa's alleged teachings regarding conductive resin layers and layer thicknesses. The additional references, namely Ito '312, and Ozawa, fail to resolve the fundamental deficiencies in Smith. For at least this reason, Appellants submit that the rejection of claim 1 based upon the various combinations of Smith, Ito '312, and Ozawa is improper and ought to be withdrawn.

If an independent claim is nonobvious under §103, then any claim depending therefrom is nonobvious. *In re Fine*, 5 USPQ2d 1596 (Fed. Cir. 1988). See MPEP 2143.03. Thus, Appellants submit that claims 10 and 11 which ultimately depend from independent claim 1, are also non-obvious.

As also discussed above, Smith fails to disclose a resinous tube "wherein the at least one second cylindrical resin layer (B) comprises a block copolymer which comprises at least one segment selected from the group consisting of polybutylene terephthalate (PBT) and polybutylene naphthalate (PBN) as a hard segment, and at least one segment selected from the group consisting of polytetramethylene glycol and polycaprolactone as a soft segment." Appellants acknowledge that the PTO has combined Smith with Ito '312. Appellants note, however, that there is no motivation or suggestion in either Smith or Ito '312 that would lead a person having ordinary skill in the art to modify Smith by replacing Smith's cover layer 14 with the *innermost* or *intermediate* layer 2a, 2b of Ito '312. Accordingly, it appears that this combination was based upon impermissible hindsight, and, on this basis, Appellants submit that the outstanding rejection based upon the combination of Smith and Ito '312 should be withdrawn.

Finally, Appellants note that the present specification contains comparative data in the form of numerous examples and comparative examples which demonstrate unexpected results. In contrast, Smith does not even contain a single working example.


In view of the foregoing, Appellants respectfully request reversal of the outstanding rejection of claims 10-11 under §103.

IV. Conclusion

In view of the foregoing, Appellants respectfully request that the Board of Patent Appeals and Interferences reverse the rejections of each pending claim and pass this application on to allowance.

Respectfully submitted,

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By 

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CLAIMS APPENDIX

1. (Previously Presented) A resinous tube comprising:
at least one first cylindrical resin layer (A) comprising at least one resin selected from the group consisting of polybutylene terephthalate (PBT), polybutylene naphthalate (PBN), polyethylene terephthalate (PET) and polyethylene naphthalate (PEN); and
at least one second cylindrical resin layer (B) formed generally coaxially with the at least one first cylindrical layer and comprising at least one copolymer which comprises polybutylene terephthalate (PBT) or polybutylene naphthalate (PBN),
wherein the at least one second cylindrical resin layer (B) is in direct contact with and serves as a supporting layer for the at least one first cylindrical resin layer (A),
wherein the at least one second cylindrical resin layer (B) comprises a block copolymer which comprises at least one segment selected from the group consisting of polybutylene terephthalate (PBT) and polybutylene naphthalate (PBN) as a hard segment, and at least one segment selected from the group consisting of polytetramethylene glycol and polycaprolactone as a soft segment,
wherein a cylindrical resin layer forming an innermost layer of the resinous tube is electrically conductive.
2. (Original) A resinous tube as claimed in Claim 1, wherein the conductive cylindrical resin layer forming the innermost layer has a volume resistivity value of not higher than $10^6 \Omega \cdot \text{cm}$.
3. (Original) A resinous tube as claimed in Claim 1, wherein the conductive cylindrical resin layer forming the innermost layer has a thickness within a range of from 3 to 30 % of a total thickness of all the layers of the resinous tube.
4. (Original) A resinous tube as claimed in Claim 1, wherein the at least one first resin layer (A) has a total thickness within a range of from 3 to 70 % of a total thickness of all the layers of the resinous tube.

7. (Previously Presented) A resinous tube as claimed in Claim 1, wherein the at least one second cylindrical resin layer (B) comprises at least one of:

(i) a random PBT copolymer, or

(ii) a random PBN copolymer,

wherein the random PBT copolymer or the random PBN copolymer comprises:

(a) a copolymer polyester which comprises an acid component and

(b) a glycol component,

wherein the acid component comprises:

at least one of a terephthalic acid, an ester-formable derivative of terephthalic acid, a naphthalenedicarboxylic acid, or an ester-formable derivative of naphthalenedicarboxylic acid, and

at least one of a hydrogenated dimer acid or an ester-formable derivative of hydrogenated dimer acid, and

wherein the glycol component comprises 1, 4-butanediol.

8. (Previously Presented) A resinous tube as claimed in Claim 1, wherein the PBT copolymer is a copolymer polyester prepared by copolymerization of polytetramethylene glycol and a copolymer polyester which includes an acid component and glycol component,

wherein the acid component comprises:

at least one of a terephthalic acid, an ester-formable derivative of terephthalic acid, a naphthalenedicarboxylic acid, or an ester-formable derivative of naphthalenedicarboxylic acid, and

at least one of a hydrogenated dimer acid or an ester-formable derivative of hydrogenated dimer acid, and

wherein the glycol component comprises 1, 4-butanediol.

9. (Previously Presented) A resinous tube as claimed in Claim 1, wherein the conductive cylindrical resin layer forming the innermost layer comprises a resin which comprises a copolymer polyester which comprises an acid component and a glycol component,

wherein the acid component comprises:

at least one of a terephthalic acid, an ester-formable derivative of terephthalic acid, a naphthalenedicarboxylic acid, or an ester-formable derivative of naphthalenedicarboxylic acid, and

at least one of a hydrogenated dimer acid or an ester-formable derivative of hydrogenated dimer acid, and

wherein the glycol component includes 1, 4-butanediol.

10. (Previously Presented) A resinous tube as claimed in Claim 1, wherein the conductive resin layer forming the innermost layer comprises a resin comprising polybutylene terephthalate (PBT) in which ethylene-propylene rubber (EPR) is dispersed, the resin having a volume resistivity value of not higher than $10^6 \Omega \cdot \text{cm}$.

11. (Original) A resinous tube as claimed in Claim 10, wherein the ethylene propylene rubber has a particle size of not larger than $1 \mu\text{m}$.

12. (Original) A resinous tube as claimed in Claim 1, wherein the conductive cylindrical resin layer forms part of the at least one first cylindrical resin layer and the at least one second cylindrical resin layer.

13. (Original) A resinous tube as claimed in Claim 1, wherein the conductive resin layer is independent from the at least one first cylindrical resin layer and the at least one second cylindrical resin layer.

14. (Previously Presented) A tube for piping in a fuel system of a vehicle, comprising:
at least one first cylindrical resin layer (A) comprising at least one resin selected from the group consisting of polybutylene terephthalate (PBT), polybutylene naphthalate (PBN), polyethylene terephthalate (PET) and polyethylene naphthalate (PEN); and
at least one second cylindrical resin layer (B) formed generally coaxially with the at least one first cylindrical layer and comprising at least one copolymer which comprises polybutylene terephthalate (PBT) or polybutylene naphthalate (PBN),

wherein the at least one second cylindrical resin layer (B) is in direct contact with and serves as a supporting layer for the at least one first cylindrical resin layer (A),

wherein the at least one second cylindrical resin layer (B) comprises a block copolymer which comprises at least one segment selected from the group consisting of polybutylene terephthalate (PBT) and polybutylene naphthalate (PBN) as a hard segment, and at least one segment selected from the group consisting of polytetramethylene glycol and polycaprolactone as a soft segment,

wherein a cylindrical resin layer forming an innermost layer of the resinous tube is electrically conductive, fuel being in direct contact with an inner surface of the innermost layer.

15. (Previously Presented) A motor vehicle comprising a tube according to Claim 1.

16. (Previously Presented) A fuel system for a motor vehicle comprising a tube according to Claim 14.

17. (Previously Presented) A motor vehicle comprising a fuel system according to Claim 16.

18. (Previously Presented) A resinous tube comprising:

at least one first cylindrical resin layer (A) comprising at least one resin selected from the group consisting of polybutylene terephthalate (PBT), polybutylene naphthalate (PBN), polyethylene terephthalate (PET) and polyethylene naphthalate (PEN); and

at least one second cylindrical resin layer (B) formed generally coaxially with the at least one first cylindrical layer and comprising at least one copolymer which comprises polybutylene terephthalate (PBT) or polybutylene naphthalate (PBN),

wherein the at least one second cylindrical resin layer (B) comprises a block copolymer which comprises at least one segment selected from the group consisting of polybutylene terephthalate (PBT) and polybutylene naphthalate (PBN) as a hard segment, and at least one segment selected from the group consisting of polytetramethylene glycol and polycaprolactone as a soft segment,

wherein a cylindrical resin layer forming an innermost layer of the resinous tube is electrically conductive.

EVIDENCE APPENDIX

- NONE -

RELATED PROCEEDINGS APPENDIX

- NONE -